

## AHA/ASA Release Guideline on Stroke Prevention in Women

### Key Points for Practice

- Prophylactic carotid endarterectomy for stroke prevention can be performed in highly selected patients with asymptomatic carotid artery stenosis, and in patients with a history of transient ischemic attack or stroke when perioperative risk is low.
- Aspirin therapy is reasonable in women with diabetes or in those 65 years and older if their blood pressure is controlled and the benefit for ischemic stroke and myocardial infarction prevention is likely to outweigh the risks.
- Women with chronic primary or secondary hypertension, or hypertension in a previous pregnancy should take low-dose aspirin from 12 weeks of gestation until delivery.

*From the AFP Editors*

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Stroke is the third leading cause of death in women, and its impact is becoming increasingly higher in women compared with men. The 2010 National Health Interview Survey showed that more than one-half of the 6 million adults with stroke were women. Another study showed that between 2006 and 2010, the prevalence of stroke survivors did not significantly change for women, whereas it declined for men.

Although risk factors such as age, history of cardiovascular disease, obesity, unhealthy diet, physical inactivity, smoking, and metabolic syndrome increase the risk of stroke in men and women, risk factors that are stronger or more prevalent in women are migraine with aura, atrial fibrillation, diabetes mellitus, and hypertension. Additionally, there are sex-specific risk factors that affect only women such as pregnancy, preeclampsia, gestational diabetes, and use of oral contraceptives or postmenopausal hormones.

The American Heart Association and American Stroke Association (AHA/ASA) have released a guideline to help physicians identify women with increased risk of stroke and initiate appropriate preventive measures. The guideline includes recommendations on pregnancy and stroke;

cerebral venous thrombosis; use of oral contraceptives; use of postmenopausal hormone therapy; migraine with aura; obesity, metabolic syndrome, and lifestyle; and atrial fibrillation.

### Prevention Strategies

Because women are underrepresented in clinical stroke prevention trials, it is unclear whether current evidence-based practices apply to women. Differences between men and women in the anatomy of the internal carotid arteries and in the composition of plaque may mean that there are different risks and benefits to treatment. Until further research is completed, the recommendations for prevention of stroke in women with symptomatic or asymptomatic carotid disease are the same as for men.

*The following recommendations are based on data derived from multiple randomized clinical trials or meta-analyses.* Prophylactic carotid endarterectomy performed with less than 3% of morbidity and mortality can be useful in highly selected patients with asymptomatic carotid stenosis (at least 60% on angiography or at least 70% on validated Doppler ultrasonography). This procedure can be recommended in women with a recent (within past six months) transient ischemic attack or ischemic stroke and ipsilateral severe carotid stenosis (70% to 99%) if the estimated perioperative morbidity and mortality risk is less than 6%.

*The following recommendations are based on data derived from a single randomized trial or nonrandomized studies.* Depending on patient factors such as age and comorbidities, carotid endarterectomy can be recommended in women with a recent transient ischemic attack or ischemic stroke and ipsilateral moderate carotid stenosis (50% to 69%) if the estimated perioperative morbidity and

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mortality risk is less than 6%. If indicated, it is reasonable for the surgery to take place within two weeks in women with no contraindications to early revascularization. Aspirin therapy is reasonable in women with diabetes and no contraindications. It can also be useful in women 65 years and older if their blood pressure is controlled and the benefit for ischemic stroke and myocardial infarction prevention is likely to outweigh the risk of gastrointestinal bleeding and hemorrhagic stroke. Aspirin may also be useful in women younger than 65 years. Clopidogrel (Plavix) can be substituted in women at high risk (i.e., 10-year predicted risk of cardiovascular disease is 10% or more) who cannot take aspirin.

*The following recommendations are based on consensus opinion of experts, case studies, or standard of care.* Women with asymptomatic carotid stenosis should be screened for other treatable risk factors, and lifestyle modifications should be initiated. Because aspirin was used in all major trials that demonstrated effectiveness, it should be used in women undergoing carotid endarterectomy who do not have contraindications.

### Preeclampsia

Although stroke is uncommon in pregnancy, the risk is higher in young women who are pregnant compared with those who are not pregnant. The highest risk is in the third trimester and postpartum. Pregnancy-related hypertension is the leading cause of hemorrhagic stroke and ischemic stenosis in pregnancy and postpartum.

*The following recommendations are based on data derived from multiple randomized clinical trials or meta-analyses.* Women with chronic primary or secondary hypertension, or who had hypertension in a previous pregnancy should take low-dose aspirin from 12 weeks of gestation until delivery. To prevent preeclampsia, calcium supplementation should be considered for women with low intake of dietary calcium (less than 600 mg per day). Pregnant women with severe hypertension should be treated with safe and effective medications such as methyldopa, labetalol, and nifedipine (Procardia). Maternal and fetal adverse effects should be considered when choosing a medication.

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